CLAIMS

What is claimed is:

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1. A method of adaptive power control in a computer network having a plurality of nodes coupled to a common transmission media, comprising the steps of:

sending a training packet from the transmission node of the network to a receiving node in the network at a predetermined power level;

determining the preferred power level for reliable communications between the transmission node and the receiving node;

sending a configuration packet from said receiving node to said transmission node including the preferred power level for communication; and

sending a primary data communication from the transmission node to the receiving node at the preferred power level.

2. The method of claim 1 further comprising the step of performing collision detection at the transmission node and waiting until there are no communications on the transmission media of the network before sending the training packet.

3. The method of claim 1 further comprising the step of determining the average noise level on the transmission media of the network.

4. The method of claim 1 wherein the step of determining the preferred power level for reliable communications between the transmission node and the receiving node comprises the steps of:

determining the average noise level on the transmission media of the network;

determining the signal level necessary at the receiving node given the average noise level and required signal-to-noise ratio for reliable communication to the receiving node;

determining the amount of attenuation suffered by the training packet between the transmission node and the receiving node; and

determining the proper transmit level by summing the signal level necessary at the receiving node and the amount of attenuation.

5. The method of claim 4 wherein the step of determining the signal level necessary at the receiving node given the average noise level and required signal-to-noise ratio for reliable communication to the receiving node comprises the step of:

adding the average noise level to the signal-to-noise ratio to determine the signal level necessary at the receiving node.

6. The method of claim 4 further comprising the step of adding a margin for error to the proper transmit level.

7. The method of claim 4 wherein the step of determining the amount of attenuation suffered by the training packet between the transmission node and the receiving node comprises the steps of:

determining the average power level of the training packet as received at the receiving node; and

comparing the power level of the training packet at the receiving node to the predetermined power level at which the training packet was sent to determine the amount of attenuation.

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8. The method of claim 1 wherein the training packet is sent at full power as predetermined by network protocol.

9. The method of claim 1 wherein the preferred power level for communications between the transmission node and the receiving node is the minimum power level for reliable communications.

10. A system for performing adaptive power control of communications between a transmission node and a receiving node in a network, comprising:

a line interface coupled to the transmission media of the network;

a receiver operating in a receiving node of the network, comprising:

receiver signal monitoring logic coupled to said line interface to monitor the status of the transmission media of the network;

receiver signal processing logic coupled to said line interface to receive and extract data from transmissions on the transmission media;

receiver control logic coupled to said receiver signal monitoring logic and said receiver signal processing logic, where the receiver control logic determines the preferred power level for transmissions received from a transmission node in the network.

11. The system of claim 10 wherein said receiver signal monitoring logic determines the average noise level on the transmission media when the line is quiet and communicates this level to the control logic.

12. The system of claim 10 wherein said receiver signal monitoring logic determines if a training packet sent by the transmission node is intended for the receiving node.

13. The system of claim 12 wherein said receiver signal monitoring logic determines the average power level of the training packet as received and communicates this level to the receiver control logic.

14. The system of claim 10 wherein said receiver control logic determines the attenuation between the receiving node and the transmission node.

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15. The system of claim 13 wherein said receiver control logic determines the attenuation between the receiving node and the transmission node by comparing the power level of the average power level of the training packet as received to the predetermined power level at which the training packet was originally sent.

16. The system of claim 10 wherein said receiver control logic determines the preferred power level from the noise level on the transmission media, the attenuation between the receiving node and the transmission node, and the required signal to noise ratio for reliable communication with the receiving node.

17. The system of claim 10 wherein said receiver control logic sends the preferred power level to the transmitter of the receiving node for transmission in a configuration packet to the transmission node.

18. The system of claim 10 wherein said receiver control logic controls said receiver signal processing logic to extract the data from a data transmission to the receiving node.

19. The system of claim 10 wherein the receiving node confirms success of communication between the transmission node and the receiving node by sending an acknowledgment to the transmission node.

20. A system for performing adaptive power control of communications between nodes in a network, comprising:

a line interface coupled to the transmission media of the network;

a transmitter operating in a transmission node of the network, comprising:

transmitter signal processing logic coupled to said line interface to send transmissions to the transmission media;

transmitter control logic coupled to said signal processing logic, where the transmitter control logic directs the transmitter signal processing logic to send a training packet to the receiving node at a predetermined power level, waits for a configuration packet from the receiving node, and then directs the transmitter signal processing logic to send a primary data transmission to the receiving node at a preferred power level.

21. The system of claim 20 wherein said transmitter control logic determines the preferred power level for the primary data transmission from the configuration packet received back from the receiving node in response to the training packet.

22. The system of claim 20 wherein said training packet is only sent once the transmission media is quiet.

23. The system of claim 20 wherein said transmitter control logic 68 uses the preferred power level information to adjust certain parameters and settings in the transmitter signal processing logic 66 so that the primary data transmission is sent at the preferred power level.